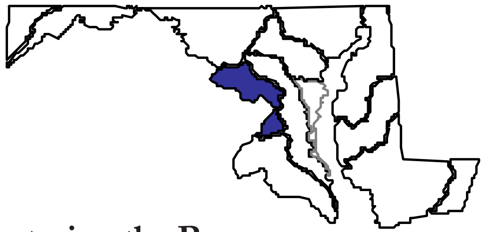
Basin Overview

November 2003

Middle Potomac



Restoring the Bay: The Land-Water Connection

The Middle Potomac, like other tributaries to the Chesapeake Bay, is degraded by nutrient and sediment pollution harming aquatic life. Excess nutrients and sediments are the primary sources of pollution in the Chesapeake Bay. Nutrients occur naturally in soil, animal waste, plants, and the atmosphere; but in the Chesapeake Bay watershed, urbanization and farming have increased nutrient loads to unhealthy levels. These nutrients – nitrogen and phosphorus – promote the growth of algae, which in turn, blocks sunlight from reaching underwater grasses and reduces dissolved oxygen and suitable habitat for aquatic life.

The Middle Potomac River Basin

The Middle Potomac River basin drains approximately 610 miles of land, including portions of Montgomery and Prince George's County.

The mainstem river serves as a receiving tributary for upriver sources. Major tributaries include Seneca, Rock and Piscataway Creeks and the Anacostia River.

The Middle Potomac, along with all tributary basins in the Chesapeake, contribute to and are impacted by nutrient pollution. Nutrient pollution can be divided into two major categories – point sources (pollution that comes from a single, definable location, such as a wastewater treatment plant or industrial discharge) and nonpoint sources (pollution that cannot be attributed to a clearly identifiable, specific physical location, such as runoff from land and atmospheric deposition). Runoff from different land uses, point sources, and atmospheric deposition are the major sources of nutrients within the Bay watershed.

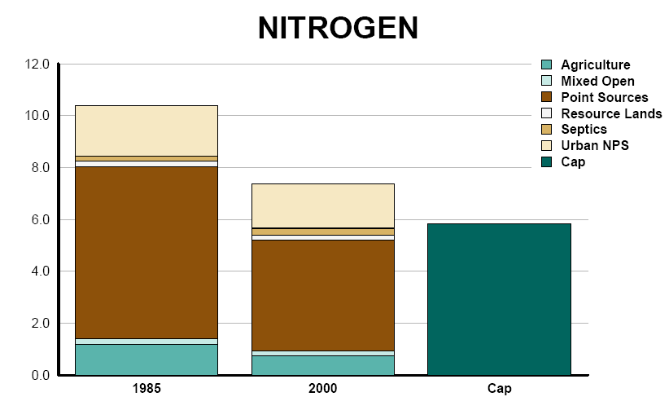
In the Middle Potomac River basin, land use is primarily developed. Because of the nature of the Middle Potomac, the largest portions of nitrogen come from point sources and urban non-point sources. The main sources of phosphorus laods are urban non-point and point sources in that respective order. Forest and wetlands are a land use that releases few nutrients to rivers and the Bay. Baywide, approximately 33% of nitrogen loads come from atmospheric sources; however, this figure varies from basin to basin and is included in land based loads.

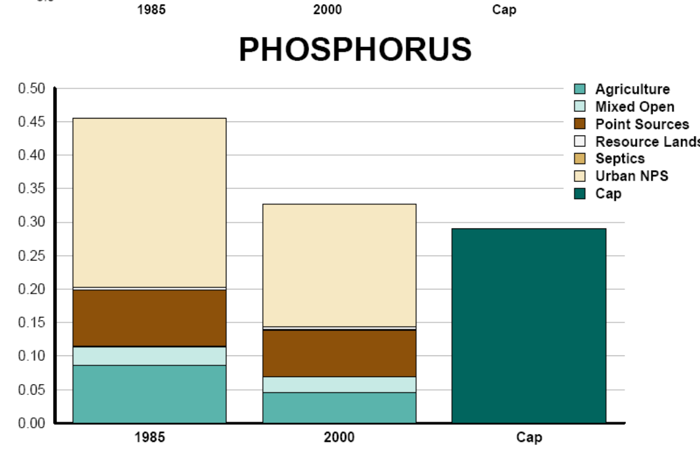
A Work in Progress

Maryland has been working since the first Chesapeake Bay Agreement was signed in 1983 to reduce nutrient pollution to the Chesapeake Bay. Since 1985, wastewater treatment plants, farmers, and others have achieved significant nitrogen and phosphorus reductions. Nitrogen loads in the Middle Potomac basin have been reduced 29% from 10.38 to 7.38 million pounds a year since 1985, and phosphorus loads have been reduced 28% from .45 to .33 million pounds.

Large portions of these reductions were achieved through point source reductions in addition to agricultural best management practices (BMPs). These are practices that provide the most effective and practicable means of controlling pollutants, such as nutrient management or cover crops. In the Middle Potomac basin, nitrogen loads from agriculture dropped 37% and phosphorus

Middle Potomac River Basin Nutrient Goals





*Updated 2002 Progress information available soon loads decreased 48%, while nitrogen and phosphorus point source contributions dropped 36% and 17%, respectively. Loading from urban non-point sources decreased by 11% for nitrogen and 27% for phosphorus between 1985 and 2000. Loading from septic systems increased over this same time period by 28% for nitrogen.

Goals for a Healthy Bay

In 2000, the Chesapeake Bay Program partners – Maryland, Virginia, Pennsylvania, the District of Columbia, the U.S. Environmental Protection Agency, and the Chesapeake Bay Commission – signed *Chesapeake 2000*, a new agreement designed to protect and restore living resources, vital habitats, and water quality in the Bay and its watershed. Key parts of this agreement include developing new nutrient and sediment goals for the Bay and its tidal tributaries based on the needs of living resources and revising the Tributary Strategies to achieve these new goals.

In the spring of 2003, the Chesapeake Bay Program finished developing water quality criteria that identify the levels of dissolved oxygen, water clarity, and chlorophyll (algae) that are needed to support healthy populations of Bay living resources. The Chesapeake Bay Program used computer models to estimate the amount of nitrogen and phosphorus loads (also called loading caps) that can enter the Bay while achieving these water quality criteria. These loads were allocated to each tributary basin and state. As a result, each basin will have nutrient reductions to be achieved in order to reach their nutrient loading cap.

The revised nutrient caps for the Middle Potomac River basin are 5.82 million pounds of nitrogen and .29 million pounds of phosphorus.

Water Quality

Monitoring data for the Middle Potomac River show trends from 1985 – 2000. Over this period, nitrogen levels improved (decreased) in most of the basin, due in part to improvements in wastewater treatment (BNR). In spite of these reductions, nitrogen levels remain poor (high) and algae levels are increasing in tidal areas, indicating that further reductions are needed. There were no trends in phosphorus or TSS in the tidal areas during this time period.

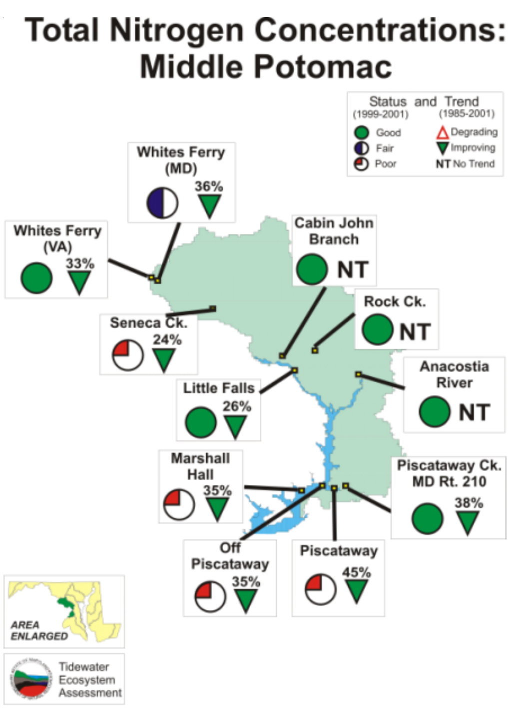
Living Resources in the Middle Potomac River

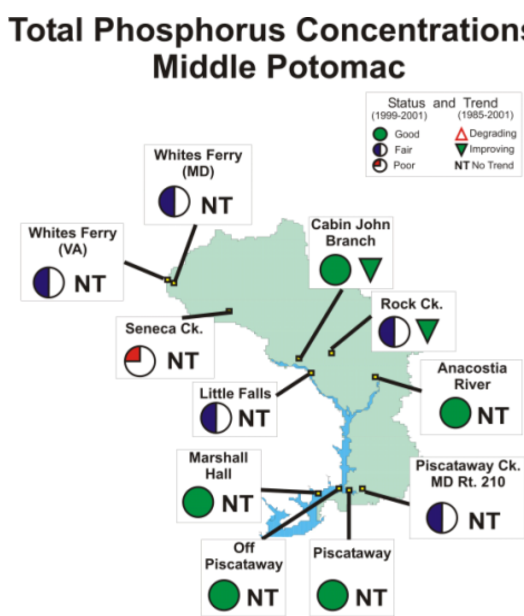
The Middle Potomac River watershed provides habitat for many species of aquatic and terrestrial life. The basin supports over 100 species of fish in its freshwater streams and brackish waters, including white and yellow perch, largemouth bass, and catfish.

Local Benefits

By addressing nutrient and sediment pollution in the Middle Potomac River basin there will be local and downstream advantages. The result will be a decrease in algal production that will aid in the return of underwater grasses and improved habitat.

For nontidal areas, the Maryland Biological Stream Survey (MBSS) provides a picture of overall ecological stream health (since 1995 in this basin). Data, such as measures of the variety of species, pollution sensitivity, and proportion of exotic species, are collected for each stream. These data are combined into one overall value, or index of health, for the streams that is referred to as an Index of Biotic Integrity (IBI). By using this index, complex ecological information can be summarized and stream health can be rated as good, fair, poor, or very poor. Streams rated good or fair by the index are considered healthy compared to



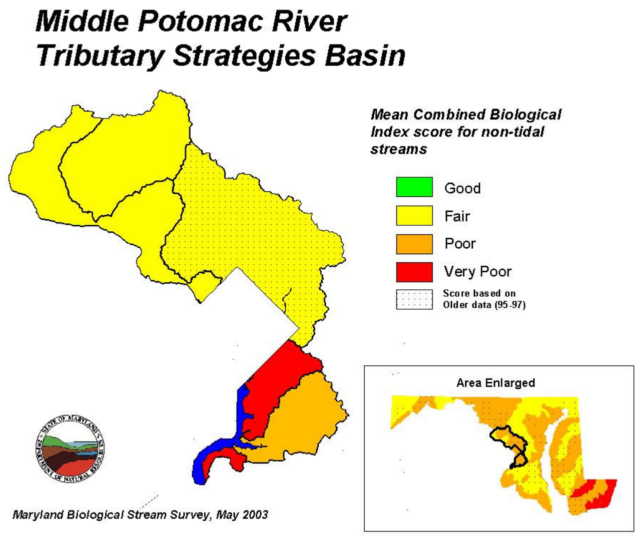


More detailed stream information is available from Montgomery County.

reference streams, while streams rated poor or very poor are considered unhealthy.

In the Middle Potomac River, most of the monitoring sites were rated as having a fair Index of Biotic Integrity scores. Towards the southerb part of the basin, monitoring sites were rated as poor or very poor.

Addressing the quality of the streams will translate into local habitat quality and contribute to the support of such critical natural resources to the Bay. Healthy local streams and rivers will not just serve as a recreational asset to the local community but often translates into an increased quality of life and local economic benefits



Downstream Benefits

Restoration efforts in the Middle Potomac River will be felt elsewhere. By achieving the nutrient goals, and addressing sediment in the Middle Potomac River, we expect to see decreased algal production downstream, better habitat, and a resurgence of underwater grasses. The following is a description of living resource challenges and goals for the mainstem and tidal areas of the Chesapeake Bay Watershed.

Bay Grasses

Underwater grasses, or submerged aquatic vegetation, play an important ecological role to the Chesapeake Bay environment. They provide food, refuge, and nursery habitat for many waterfowl, fish, shellfish, and invertebrates, and produce oxygen in the water column. These grasses also filter and trap sediment that cloud the water and bury bottom-dwelling organisms, such as oysters; provide shoreline erosion protection by slowing down wave action; and remove excess nutrients that could fuel unwanted growth of algae in the surrounding waters.

Submerged aquatic vegetation had largely vanished in the Bay by the 1970s, primarily due to poor water quality. Over the past decade, improvements in water quality have led to a modest resurgence in underwater grasses in some parts of the Bay. In 2000, underwater grasses covered about 69,000 acres in the Bay. In 2003, the Chesapeake Bay Program set a new goal for underwater grasses of 185,000 acres Baywide. This was based in part on the amount of grasses which would return once we achieve the new nutrient reduction goal.

Blue Crabs

The blue crab is one of the most important species harvested in the Bay. It has the highest value of any commercial fishery and supports a recreational fishery of significant, but undetermined, value. Due to loss of habitat and harvest pressure, however, the abundance of mature female crabs is at near historic lows. The *Chesapeake 2000 Agreement* calls for the Bay partners to "manage the blue crab fishery to restore a healthy spawning biomass, size, and age structure." To achieve this, Maryland and Virginia have committed to reduce harvest pressure on blue crabs by 15% compared to the harvests of 1997 through 1999.

Restoring underwater grasses will be an important step in restoring blue crab populations. During the 1970s and 1980s, the widespread disappearance of underwater grasses resulted in a severe loss of important crab habitat and nursery areas, primarily for females and crabs in the molting stage. Bay scientists have found that 30 times more juvenile crabs were found in areas with Bay grasses than in areas without.

Oysters

Over-harvesting, dwindling habitat, pollution, and diseases (such as Dermo and MSX) have caused a severe decline in oysters throughout the Chesapeake Bay over the last century. Since the 1950s, harvests have fallen Baywide from 35 million pounds to below 3 million pounds. In addition to their fisheries value, oysters are critical to the Bay's ecosystem. They provide habitat for many Bay species and help improve water clarity by filtering algae and sediment from the water.

The *Chesapeake 2000 Agreement* commits to increasing native oysters tenfold by 2010. The Oyster Restoration Strategy, which was developed to support the agreement, focuses on rehabilitating oyster habitat, much of which is degraded by silt and nearly barren. In addition to improving habitat, the strategy aims to increase the oyster population by the construction of a Baywide network of non-harvest sanctuary areas. Up to 250 such areas have been suggested throughout the Bay so far. Protected from harvesting, it is hoped that some of the oysters in these sanctuaries will survive disease and enhance the Bay's oyster population.

Tools for Change

Maryland's Tributary Teams are leading the revision of their Tributary Strategies – watershed-based plans to achieve the nutrient and sediment goals within each of the state's 10 tributary basins. Restoring the Middle Potomac River will require the active involvement of all watershed residents. Strategies for the Middle Potomac basin will be drawn from an array of measures to reduce the amounts of nutrients from wastewater treatment plants and agricultural, urban, and suburban lands. Protection of forests and wetlands will help prevent increases in nitrogen and phosphorus loads.

The Next Steps

Over the coming months, the Middle Potomac River Tributary Team and Maryland's Departments of Natural Resources, Environment, Agriculture, and Planning will work closely with residents of the basin to identify best management practices that can be applied in the watershed to reduce nutrient pollution and restore habitat.

These practices will be summarized in a Tributary Strategy for the basin. Funds to implement this strategy will be sought from federal, state, and local governments. Private landowners and other watershed residents will also contribute. While implementation may not be complete by the target date of 2010, every effort will be made to reach the water quality goals by that date.

With input from the 1st round of public meetings in June 2003, the Tributary Strategy for the Middle Potomac River basin was drafted this summer and fall by the Team and the Tributary Strategies Development Workgroup. This workgroup worked closely with state and local governments, team members, local constituents and other stakeholder groups. The working draft of the document will be available for review, and a second round of public meetings is planned for Decemkber 2003 for public review of the strategies.

For more information or how to get involved with the Middle Potomac River Tributary Team:

- Middle Potomac River Technical Basin Summary: www.dnr.state.md.us/bay/tribstrat/basin_summaries.html
- Maryland Biological Stream Survey: www.dnr.state.md.us/streams/pubs/potomacwashingtonmetro.pdf
- Chesapeake Bay water quality criteria: www.chesapeakebay.net
- Maryland's water quality standards: www.mde.state.md.us
- Maryland's Tributary Teams: www.dnr.state.md.us/bay/tribstrat.html

Look out for the next round of tributary strategy public meetings or get involved with your local tributary team!

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